

WHAT IS CLAIMED IS:

1. An apparatus for retaining fluid in a liquid delivery tube comprising
 - a. A lower portion having a ball valve that permits only unidirectional flow of fluids and includes a valve chamber for housing a ball and having an inlet end and an outlet end being spaced apart sufficiently so that said ball is longitudinally, reciprocally movable within said chamber from a closed position at the inlet end of said chamber to an open position at the outlet end of said chamber; and
 - b. An upper tubular portion that has an outside diameter that is tapered so that it can be inserted into a liquid delivery tube, said tubular portion having an elongated, tapered passageway that communicates with said outlet end of the valve chamber to convey fluid from said chamber to said tube.
2. A fluid retaining apparatus as recited in claim 1, wherein at least one interior rib extends inward from an inside upper portion of the outlet of the valve chamber so that said ball cannot significantly obstruct the flow of fluids through the outlet of the valve chamber.
3. A fluid retaining apparatus as recited in claim 2, wherein the inside upper portion of the valve chamber includes a plurality of said interior ribs that are circumferentially spaced apart.
4. A fluid retaining apparatus as recited in claim 3, wherein said plurality of said interior ribs are longitudinally aligned.

5. A fluid retaining apparatus as recited in claim 1, wherein said valve chamber inlet end includes a valve seat having sidewalls that taper inwardly such that the diameter of said valve seat is reduced toward the valve chamber inlet end to prevent said ball from becoming stuck therein.

6. A fluid retaining apparatus as recited in claim 5, wherein said valve seat sidewalls taper inwardly at an angle less than 20.76° but greater than 14.76° .

7. A fluid retaining apparatus as recited in claim 1, wherein the diameter of the passageway of the upper tubular portion tapers inwardly so that the flow of fluid through the upper tubular portion is restricted.

8. A fluid retaining apparatus as recited in claim 7, wherein the diameter of the passageway of the upper tubular portion is adjustable.

9. A fluid retaining apparatus as recited in claim 1, wherein the upper tubular portion can be inserted into the bottom of said liquid delivery tube.

10. An apparatus for retaining fluid in a liquid delivery tube comprising

- a. A lower portion having a ball valve that permits only unidirectional flow of fluids and includes a valve chamber for housing a ball and having an inlet end and an outlet end being spaced apart sufficiently so that said ball is longitudinally, reciprocally movable within said chamber from a closed position at the inlet end of said chamber to an open position at the outlet end of said chamber;
- b. An upper tubular portion that has an outside diameter that is tapered so that it can be inserted into a liquid delivery tube, said tubular portion having an elongated, tapered passageway that communicates with said

outlet end of the valve chamber to convey fluid from said chamber to said tube; and

- c. Said valve chamber inlet end having a valve seat with sidewalls that taper inwardly such that the diameter of said valve seat is reduced toward the valve chamber inlet end to prevent said ball from becoming stuck therein and there is sufficient spacing between said inlet end and said outlet end of said valve chamber so that a portion of the liquid in said delivery tube is permitted to pass back through said apparatus to reduce the amount of liquid in said tube.

11. An apparatus for retaining fluid in a liquid delivery tube comprising

- a. A lower portion having a ball valve that permits only unidirectional flow of fluids and includes a valve chamber for housing a ball and having an inlet end and an outlet end being spaced apart sufficiently so that said ball is longitudinally, reciprocally movable within said chamber from a closed position at the inlet end of said chamber to an open position at the outlet end of said chamber;
- b. An upper tubular portion that has an outside diameter that is tapered so that it can be inserted into a liquid delivery tube, said tubular portion having an elongated, tapered passageway that communicates with said outlet end of the valve chamber to convey fluid from said chamber to said tube; and

c. Said valve chamber inlet end includes a valve seat having sidewalls that taper inwardly at an angle less than generally 21 degrees but greater than generally 15 degrees to prevent said ball from becoming stuck therein.

12. A fluid retaining apparatus as recited in claim 1, wherein the spacing between said inlet end and said outlet end of said valve chamber is of a sufficient length so that as said ball moves from said open position to said closed position, a portion of the liquid in said delivery tube is permitted to pass back through said apparatus to reduce the amount of liquid in said tube.

13. A fluid retaining apparatus as recited in claim 12, wherein said liquid delivery tube is in the form of a straw having an upper end for delivering fluid to the mouth of a user and a bottom end to which said apparatus is attached.